

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

KRAIG A. KIRSCHNER

Serial No.: 10/668,116

Filed: September 22, 2003

For: RISSE ASSEMBLY

Group Art Unit: 3632

Examiner: Tran Le

Mail Stop Appeal
Commissioner for Patents
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APPEAL BRIEF

Sir:

The Appellant filed a Notice of Appeal in the above-identified application on October 3, 2007 under 35 U.S.C. § 134(a), and submits this Appeal Brief under 37 CFR § 41.37. The Appellant requests entry, consideration, and favorable action on this appeal.

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I. REAL PARTY IN INTEREST

The real party in interest is Automatic Fire Control, Incorporated, the exclusive assignee of the subject patent application.

II. RELATED APPEALS AND INTERFERENCES

There are no prior or pending appeals, judicial proceedings or interferences known to the Appellant which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 8, 10-12 and 14 have been twice rejected and are subjects of this appeal. Claims 1-7, 9, 13 and 15 are canceled.

IV. STATUS OF AMENDMENTS

An amendment after final rejection was presented and has been entered per notice mailed July 24, 2007.

V. ANNOTATED SUMMARY OF CLAIMED SUBJECT MATTER

Claim 8 Independent claim 8 recites a riser assembly including a CPVC pipe (pipe 10; p. 3, ll. 13-14) of a specified outside diameter (p. 3, ll. 14-23) and a clamp (clamp 12; p. 4, ll. 7-8). The clamp (12) includes two bars (bars 14, 16; p. 4, ll. 7-8) and fasteners (fasteners 18, 20; p. 4, ll. 8-9). Each bar (14, 16) has a hemicylindrical section (section 22; p. 4, ll. 13-14) having radiused inside edges (surface 28; p. 4, ll. 15-17), a first straight section (section 24; p.4, ll. 18-19) on one end of the hemicylindrical section (22) and a second straight section (section 26; p.4, ll. 4-5) on the other end of

the hemicylindrical section, each straight section (24, 26) having a through hole (p. 4, ll. 21-23) closely spaced equidistant from the hemicylindrical section (p. 4, ll. 21-23; p.5, ll. 4-6). The fasteners (18, 20) extend through the through holes to retain the two bars (14, 16) together (p. 5, l. 9) with the first straight sections (24) juxtaposed with the second straight sections (26), respectively (p. 5, l. 9), the hemicylindrical sections (22) of the two bars (14, 16) define an inside diameter smaller than the specified outside diameter by not to exceed five percent (p. 5, ll. 12-15) with the first straight sections juxtaposed with the second straight sections, respectively (p. 5, l. 15).

VI. GROUND OF REJECTION FOR REVIEW ON APPEAL

All claims stand rejected under 35 U.S.C. 103 through the combination of Brown, U.S. Patent No. 4,998,691, in view of Rahe, U.S. Patent No. 4,733,471.

VII. ARGUMENT

A. STATEMENT OF THE INVENTION

The present riser assembly includes a clamp specifically compatible with the CPVC pipe to avoid subjecting the pipe to over compression and non-uniform compression, avoidance being realized through 1) a limitation on the ability to tighten the clamp beyond a fixed amount, 2) the presentation of a cylindrical surface to effect compression fully about the pipe and 3) a preselected amount of compression to hold the pipe as a vertical riser. To this end, claim 8 recites 1) retaining the two bars together "with the first straight sections juxtaposed with the second straight sections", 2) each of the two bars having a "hemicylindrical section" and 3) the relationship between the clamp and the pipe including the "inside diameter smaller than the specified outside diameter by not to exceed five percent."

There is a specific structural significance to the foregoing recited features of claim 8 that impacts the core operation of the present invention. By having the diameters in interference and the sections both hemicylindrical as claimed, the bars must be drawn together with interference between each hemicylindrical section and the pipe *as well as* with interference against drawing the two bars together. In this way, a more uniform clamping is accomplished which is not simply through compression in one direction, i.e., perpendicular to the mating surfaces.

B. THE APPLIED PRIOR ART

1. Brown U.S. Patent No. 4,998,691

The Brown reference discloses a pipe clamp incidental to a support for the clamp. The clamp itself, elements 20 and 21, is not described in detail. Figure 1 illustrates the clamp halves 20, 21 coming together in juxtaposition to either side of the curved clamp portions 20a and 21a. There is no disclosure whatsoever regarding the shape or fit of the two curved clamp portions.

First, regarding shape, a careful look at Figure 1 of Brown suggests that the clamp is made up of traditional pipe clamp elements which each form less than a hemicylindrical section. There is no teaching that the clamp is not of traditional clamp elements. To those of ordinary skill in the art, a traditional clamp works without the straight portions ever coming together if there is to be longitudinal clamping of the pipe. By having the curved portions forming less than a hemicylindrical section, the radius being in loose fit with the pipe to be clamped and the straight portions spaced, the curved portions flex around the pipe to create more than two opposed line contacts where the tangents of the pipe and the clamp meet. In this traditional mechanism, the stress on the pipe is maximized at the

diametrically opposed points where the center of each clamp element meets the pipe.

Nothing is proposed in Brown to suggest a pipe clamp that does not work in the traditional way.

Second, regarding fit, the Brown reference does not directly discuss fit but the teachings direct one to understand that a sliding fit is contemplated. In Col. 2, lines 13-21:

The significant advantage of this arrangement is that any pullout forces induced by the piping system on the supports are resisted by the post or stud in direct tension rather than by a combination of tension and bending due to eccentric prying that occurs with typical designs. The result is that smaller, more efficient posts or studs and support rods can be used to support the piping than can be used with other constructions.

The only way to avoid bending is to allow the pipe 9 to slide in the clamp 20, 21. The point to Brown is to hold the constrained pipe from moving up or down. The constrained pipe extends laterally (Col. 1, lines 10-11, 54-56, 60-61). Thermal expansion and contraction would cause bending of the mount. Indeed, the conclusion to be drawn from the disclosure of Brown by one of ordinary skill in the art without benefit of hindsight from the present invention is that the pipe clamp is oversized to allow such longitudinal relief and, of course, can have the side portions brought into juxtaposition to form a stable support ring.

Thus, there is no teaching in Brown of a "hemicylindrical section." There is no teaching of an interference fit with a smaller diameter for the inside of the curved clamp portions than the pipe of specified outer diameter. Indeed, the teachings infer the contrary. Consequently, there is no mechanism for the creation of compression fully around a pipe.

2. Rahe U.S. Patent No. 4,733,471

The Rahe reference is a clamp for joining elongated members end to end. The device is for quick changing of alternative tool heads with ease and rapidity with repetition "hundreds of thousands of times...." The clamp is made up of two clamp members 86, 88 with cylindrical inner surfaces which clamp together. The two clamp members are not the same as one has thin slices removed at the mating surfaces to allow clamping. Col. 8, ll. 16-17 and Figure 6c. They are important to the embodiment for creating a friction fit:

Referring first to the right clamp member 86 as shown in FIG. 6A-6C, that clamp member is formed to essentially a full, half-clamp and full, half-right internal cylindrical surfaces (apart from the slight chamfering as shown) except for the absence of a thin slice at the pair of flat faces 90 of the clamp member. These, of course, are the faces which are adapted to oppose corresponding faces of the left clamp member. The absence of this thin slice is represented by the two dashed-dotted lines 92 and the arrows 94. As indicated, these faces are essentially perpendicular to the axes of the openings through the clamp member for the wing screws 42 and for the tool-operated, e.g., Allen screws 46 (see also FIG. 8). There, of course, is a pair of holes 96 for the tool-operated screws, toward the upper end and a pair of holes 100 for the wing screws, toward the lower end. Such holes in the right clamp are not threaded.

Col. 8, ll. 12-28.

The diameter of the right cylinder cylindrically shaped internal surfaces "of course, is designed to approximate the outer diameter of the shaft tubes 46 and 48." Col. 8, ll. 32-34. Without this approximation, it would be difficult to position the free end of the elongate member before tightening. With the missing slices, Rahe allows tightening the clamp to form compression in one direction, perpendicular to the mating surfaces as drawn together by the threaded elements 42, 44.

Further, the clamp members 86, 88 are aluminum (col. 10, ll. 23-24) and appear to be cast or forged. Further, reference is made to an intended hundreds of thousands of cycles. Col. 2, ll. 12-13. Therefore, there is an implication that the clamp members are rigid and cannot conform to create a compression ring around a clamped tool end, in keeping with the teaching at col. 8, ll. 32-34. One of ordinary skill in the art would not see this machine coupling as a pipe clamp as in Brown. However, it creates the same diametrically opposed forces, with less distribution of pressure, as in Brown.

Thus, there is specific teaching that one of the clamp members is not hemicylindrical. There is no teaching of an interference fit with a smaller diameter for the inside of the curved clamp portions than the pipe of specified outer diameter. Consequently, there is no mechanism for the creation of compression fully around a pipe.

C. CLAIM 8 (and 10-12, 14)

1. Claim Recitations

[A] clamp including two bars, each bar of the clamp defining a hemicylindrical section....

[The] hemicylindrical sections of the two bars defining an inside diameter smaller than the specified outside diameter by not to exceed five percent with the first straight sections juxtaposed with the second straight sections, respectively.

2. The Rejection

The Official Action asserts that Brown includes sections which are "substantially hemicylindrical" (OA 5/3/2007, p.2) and admits the lack of a recitation of "the inside diameter of the hemicylindrical sections of the two bars being smaller than the specified

outside diameter (of the CPVC pipe) by not to exceed five percent with the first straight section juxtaposed with the second straight sections, respectively.” OA 5/3/2007, p. 3.

The Official Action asserts that Rahe teaches the concept of “the clamp members designed with respect to the outer diameter of the tube 46 being the ranges of less than or equal to about 3.5 percent of the outer and greater than or equal to about 0.5 percent of such diameter....” OA 5/3/2007, p. 3. In reply to prior arguments, the Official Action asserts than a variation in the range [presumably from 3.5% to 5%] is obvious. OA 5/3/2007, p. 6.

3. The Failure of Support for the Rejection

a. Brown

Applicant has no understanding of what “substantially” means in the context of “substantially hemicylindrical” asserted in the Official Action other than to assert that the current claims do not use that phrase. If the implication is that the reference is close enough for obviousness, the Official Action fails to make a supported factual finding to come to that conclusion. “(2) Ascertaining the differences between the claimed invention and the prior art....” *Federal Register* Vol. 72, No. 195, p. 57527-8; *MPEP* §2141.02. “Objective evidence relevant to the issue of obviousness must be evaluated by Office personnel.” *Id.* at 57527-9 citing to *Graham v. John Deere Co.* 383 U.S. 1 at 17-18, 148 USPQ 459 at 467 (1966), as applied with approval in *KSR International Co. v. Teleflex Inc.* (KSR), 550 U.S. ___ at ___, 82 USPQ2d 1385 at 1396(2007).

Rather than a substantial similarity, there is a difference in kind between the Brown curved portions and the claim recited hemicylindrical sections. The teaching is a pipe clamp, nothing more. A clamp about pipe operates as described above, to distort

and grip as the straight portions are brought toward one another. The function and result of achieving a uniform circumferential gripping is not found in Brown. There is no disclosed prior art element in Brown that meets this claim language, there is no substitution of one known element for another, the overall technique to achieve uniform clamping is not disclosed, achieved in the same way or even applied in another context. There are no KSR “rationales” for a factual conclusion of any “substantially hemicylindrical” elements in the Brown pipe clamp. *Federal Register* Vol. 72, No. 195, p. 57529.

The KSR elements of unobviousness is also persuasive. As developed above, the way the Brown device works requires that there be no longitudinally gripping of the supported pipes by the clamps. Would it be obvious for one of ordinary skill in the art to take Brown and derive from it a way to create compression fully around and capable of supporting a frangible, vertically oriented pipe through a dissimilar device using a wholly different gripping mechanism? Brown only supports a traditional pipe clamp, and a loose one at that. Looking similar is not a test of obviousness.

Brown teaches away from clamping. KSR 550 U.S. ___ at ___, 82 USPQ2d 1385 at 1395. Brown does not provide the recited elements, i.e., the hemicylindrical sections and the fit and to find something that looks similar without the same structure, function or result is an application of impermissible hindsight. KSR 550 U.S. ___ at ___, 82 USPQ2d 1385 at 1397. Brown does not anticipate the synergistic or unexpected result of a uniform clamping afforded by the claimed subject matter. KSR 550 U.S. ___ at ___, 82 USPQ2d 1385 at 1395. Brown fails, upon multiple grounds, to provide teachings to

support an obviousness rejection of the claims at issue and, indeed, the elements of unobviousness indicate patentability.

b. Rahe

The assertion in the Official Action that Rahe teaches the concept of the fit of the present invention, to supplement the failing of Brown, is based upon an interference range when the two elements of the clamp are drawn together but has nothing to do with the curvature of the hemicylindrical section about which the fit is presently claimed. As pointed out above, an important and well documented feature of Rahe is the very specific departure from a hemicylindrical section through the inclusion of the thin slices from the mating surfaces of one element of the clamp. It is this departure from a hemicylindrical section that provides the fit range. Thus, as with Brown, there are differences in kind, not degree. Rahe does not provide what Brown fails to provide, “the hemicylindrical sections of the two bars defining an inside diameter smaller than the specified outside diameter....” The range issue simply does not pertain.

The clamp of Rahe does not appear to distort to spread the force, being aluminum and obviously cast or forged in fairly thick walled section, and being contemplated to operate over hundreds of thousands of cycles. The articulation is in one direction, perpendicular to the part line of the clamp. See Figure 8. The function and result of achieving a uniform circumferential gripping is not found in Rahe. There is no disclosed prior art element in Rahe that meets this claim language, there is no substitution of one known element for another, the overall technique to achieve uniform clamping is not disclosed, achieved in the same way or even applied in another context. There are no KSR “rationales” for a factual conclusion of any “substantially

hemicylindrical” elements in the Rahe clamp. *Federal Register* Vol. 72, No. 195, p. 57529.

The KSR elements of unobviousness is also persuasive. As with Brown, would it be obvious for one of ordinary skill in the art to take Rahe and derive from it a way to create compression fully around and capable of supporting a frangible, vertically oriented pipe through a dissimilar device using a wholly different gripping mechanism? Rahe only supports a unidirectional clamping force through the mechanism of rigid elements forming less than a complete circle.

Rahe teaches away from the use of mating hemicylindrical sections. KSR 550 U.S. ___ at ___, 82 USPQ2d 1385 at 1395. Rahe does not provide the recited elements, i.e., the hemicylindrical sections and the fit defined by curvature so is without the same structure, function or result, evidencing an application of impermissible hindsight in making the rejection. KSR 550 U.S. ___ at ___, 82 USPQ2d 1385 at 1397. Rahe does not anticipate the synergistic or unexpected result of a uniform clamping afforded by the claimed subject matter. KSR 550 U.S. ___ at ___, 82 USPQ2d 1385 at 1395. Rahe also fails, upon multiple grounds, to provide teachings to support an obviousness rejection of the claims at issue and, indeed, the elements of unobviousness indicate patentability.

c. Brown in view of Rahe

In the Official Action, Brown is applied to show a clamp with “substantially hemicylindrical” pipe clamping elements. Rahe is added to Brown to show a tight fit. Brown and Rahe, taken independently or in combination, do not present anything that suggests compression fully around the pipe. The recited elements are not present, the function is not achieved and there are no similar results. Mere substitution of known

elements or mere combination of known elements with the same and unsurprising results (KSR 550 U.S. ___ at ___, 82 USPQ2d 1385 at 1396) do not apply here. No relevant substitution or combination is made to achieve that of the invention as presented in claim 8. Indeed, a requirement for a *prima facie* case of obviousness left untouched by KSR under MPEP §2142 is that the combination of references or other teachings had to disclose all elements of the claim. This requirement is not met by Brown and Rahe.

Brown and Rahe fail to provide any mechanism that has the ability to create compression fully around a frangible pipe. In this sense, the new and unexpected or synergistic result of the clamp of claim 8 is not achieved. KSR 550 U.S. ___ at ___, 82 USPQ2d 1385 at 1395.

Even accepting *arguendo* the claim of Brown being substantially semicylindrical, Rahe undertakes a retreat from that substantiality by providing in detail the slices from the semicylinder of one element of the clamp. The combination further factually distances itself from the invention of claim 8 requiring impermissible hindsight modification of the teachings of Rahe. KSR 550 U.S. ___ at ___, 82 USPQ2d 1385 at 1397. Again accepting *arguendo* the claim of Brown being substantially semicylindrical, any implication that there is clamping in Brown only leaves the same operative clamping perpendicular to the mating surfaces of the clamp. *Id.* None of this resembles the mechanism of the invention of claim 8 which compresses uniformly.

Finally, to bring up a phrase dropped from grace, there is no teaching, suggestion or motivation for the combination of Brown and Rahe. One does not restrain longitudinally and one clamps longitudinally; one is for pipe and one has protrusions that

can't be for pipe; one is part of a support system of extended pipe elements and one is for end clamping a tool. There has been no explanation as to why these disparate teachings would be obvious to combine as required by KSR. KSR 550 U.S. ___ at ___, 82 USPQ2d 1385 at 1396 (requirement for an articulated reason); KSR 550 U.S. ___ at ___, 82 USPQ2d 1385 at 1395 (teaching away evidence of improper combination). The combination is ineffective to teach the subject matter of the claims and is itself without support. The combination of Brown and Rahe cannot provide a basis for obviousness;

D. Conclusion

Applicant has specifically raised many individual points directed to failings in the references to Brown and Rahe, taken independently or in combination, using the standards under KSR, the new PTO guidelines pertaining to obviousness and MPEP § 2142 regarding remaining criteria for *prima facie* obviousness.

As is often the case when the prior art does not fit the invention, multiple reasons appear for the inapplicability of that art against the claimed subject matter. Accordingly, it is here asserted that the claims are properly formed and recite patentable subject matter. Consequently, reversal of the rejections against all claims is earnestly solicited.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

8. A riser assembly comprising

CPVC pipe of a specified outside diameter;

a clamp including two bars, each bar having a hemicylindrical section having radiused inside edges, a first straight section on one end of the hemicylindrical section and a second straight section on the other end of the hemicylindrical section, each straight section having a through hole closely spaced equidistant from the hemicylindrical section, and fasteners extending through the through holes to retain the two bars together with the first straight sections juxtaposed with the second straight sections, respectively, the hemicylindrical sections of the two bars defining an inside diameter smaller than the specified outside diameter by not to exceed five percent with the first straight sections juxtaposed with the second straight sections, respectively.

10. The riser assembly of claim 8, the fasteners each being a bolt with a nut threadable thereon.

11. The riser assembly of claim 8, the first straight section being a long straight section and the second straight section being a short straight section.

12. The riser assembly of claim 11, the long straight sections each having an attachment hole closely spaced from the distal end thereof.

14. (Previously presented) The riser assembly of claim 8, the specified outside diameter being a standard CPVC pipe outside diameter of one of 2.375 inches, 2.875 inches, 3.500 inches and 4.500 inches.

IX. EVIDENCE APPENDIX

(none)

X. RELATED PROCEEDINGS APPENDIX

(none)